

rarities. The only British-killed specimen previously known to exist was in the collection of Mr. J. Whitaker, of Rainworth Lodge, Notts., and had been obtained at Filey, Yorkshire, in 1862. So-called specimens had generally proved to be females or young of the Long-tailed Duck or of the American Wood Duck.

The following papers were read :—

1. On the Bats collected by Mr. C. M. Woodford in the
Solomon Islands. By OLDFIELD THOMAS.

[Received February 11, 1887.]

(Plates XXV. & XXVI.)

The Mammalian collection made by Mr. C. M. Woodford in the Solomon Islands, and recently acquired by the Natural History Museum, consists almost wholly of Bats; and as nothing has been hitherto recorded about the Chiropterous fauna of these islands, his collection is naturally of great interest and importance.

The localities at which Mr. Woodford collected were Alu, in the comparatively large Shortland Island, and Fauro Island, close to Shortland, all the specimens therefore coming from the extreme western part of the archipelago.

The collection consists of 23 specimens belonging to 10 species, of which two are new, one of these representing also a new genus. As might have been expected, the greater proportion of the species, and all of those presenting any special interest, belong to the fruit-eating section of the order. One Solomon-Island Bat only was not obtained by Mr. Woodford, namely *Pteropus rayneri*, Gray, which comes from the other extremity of the archipelago. This I have included in the following list in order to make it a complete catalogue of the known species of the group.

1. *PTEROPUS GRANDIS*, sp. n.¹ (Plate XXV.)

a, b. Ad. sk. ♂ and a separate skull. Alu, Shortland Island, 4/86.

Size large, about equal to *Pt. gouldi*. Ears decidedly longer than the muzzle, acutely pointed. Origins of wings about an inch apart on the back. Interfemoral membrane very narrow in the centre, concealed by the fur. Fur rather coarse, hispid over the shoulder-glands, rather woolly on the legs. Fore limbs and membranes nearly naked above, a few scattered black hairs on the proximal half of the forearm. Fur on back adpressed, rather more than an inch in breadth at its narrowest part. Rump and hind limbs nearly to the ankles thickly clothed with woolly hairs. Below, the humerus, proximal half of forearm, and the membranes between the humerus and femora are covered with hair, and a thin band of fur

¹ Preliminary diagnosis published, Ann. & Mag. N. H. (5) xix. p. 147, Feb. 1887.



J. Smal lith

PTEROPUS GRANDIS.

Hanhart imp



$\frac{1}{1}$

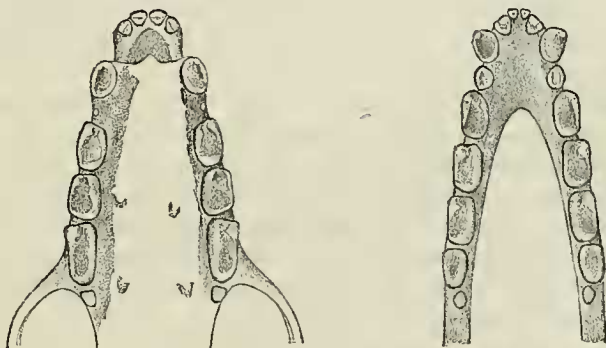
passes along outside the forearm nearly to the wrist. Femora and proximal third of tibiae thickly clothed with softer woollier fur.

Face, middle of back, chin, and centre line of belly black. Neck all round, shoulders, sides of body, and hind limbs below dark maroon-red, the tufts over the shoulder-glands rather paler. Rump and upperside of thighs bright orange-yellow, contrasting markedly with the sombre hue of the back.

Skull agreeing closely with that of *Pt. gouldi* in size and proportions.

Teeth (fig. 1) large and heavy as compared to those of *Pt. gouldi*, *Pt. chrysoproctus*, and others, but far smaller and lighter than those of *Pt. melanopogon*. Upper incisors broad, touching each other, the combined breadth of the four 8 mm. Canines rather short, thick and stout, with a broad and prominent internal basal ledge. Anterior premolars minute, deciduous. Second premolar large and broad, with a prominent internal secondary cusp. All the cheek-teeth

Fig. 1.



Teeth of *Pteropus grandis*, natural size.

broad and strong; combined length of the three largest 18 mm., and the breadth of the centre one 4 mm. Last molar slightly larger than one of the outer incisors, its antero-posterior diameter 2.2 mm. Lower teeth presenting very much the same characters as the upper. Outer incisors very large, 2 mm. in transverse diameter. Canine with large internal basal ledge or cingulum as in the upper jaw. Second premolar unusually near the canine, the comparatively large first premolar larger than the diastemata in front of and behind it, 2.6 mm. in diameter. Last molar about equal to one of the middle upper incisors, smaller than the outer and larger than the inner lower incisors.

Dimensions of an adult male in skin:—Head and body (c.) 325 mm., head 74, muzzle 32, ear (above crown) 30, forearm 170 (=6.7 in.), thumb 73, index finger 118, tibia 122, calcaneum 24.

Skull (specimen *b*). Basal length 67, greatest breadth 39, supra-orbital foramen to tip of nasals 30, interorbital breadth 10, intertemporal breadth 7.5, breadth from tip to tip of postorbital processes 30, palate length 40.

It is with considerable reluctance that I find myself compelled to add another species of *Pteropus* to the long list of those already known; but the characters of *Pt. grandis* so entirely fail to fit in with those of any of the hitherto described species, that I have no alternative but to do so.

Pt. grandis differs from every known species at all approaching its size by its dark maroon-coloured neck, throat, and sides, and by its bright yellow rump. Apart from coloration, again, it differs from *Pt. edulis* by its much smaller size and broadly edged canines, from *Pt. gouldi*, *aneiteanus*, and *poliocephalus* by its very much heavier teeth, and from *Pt. melanopogon* by its smaller teeth and longer pointed ears. On the whole it may be looked upon as most nearly allied to *Pt. chrysoproctus*, a native of the Moluccas, which resembles it in many of its characters, but differs by having its neck both above and below rich yellow, by its yellowish crown and dark-coloured rump. The teeth also of *Pt. chrysoproctus* are smaller and lighter than in *Pt. grandis*; the canines are thinner and have narrow postero-internal ledges, and, finally, there is a much greater space between the canines and second premolar below, the anterior premolar having a diameter less than the length of either of the diastemata in front of or behind it.

To another species also *Pt. grandis* bears a certain amount of resemblance, namely to *Pt. rayneri*, Gray, also from the Solomon Islands; but that species has much shorter ears, and is very far smaller, having a forearm only 135 mm. long, a skull only 55 mm. long, and teeth which, although they have very much the same shape and relative proportions as in *Pt. grandis*, yet differ so markedly in their actual size as to preclude all possibility of the two species being the same.

2. *PTEROPUS HYPOMELANUS*, Temm.

a. Alu, Shortland Island, 4/86.

Previously known range, from Borneo to New Guinea.

This is the first published notice of the occurrence of this species in the Solomon Isles; but its discovery there was made in 1883, when Surgeon H. B. Guppy, of H.M.S. 'Lark,' obtained and sent to the Museum a specimen, also collected on Shortland Island.

3. *PTEROPUS RAYNERI*, Gray¹.

Discovered in the islands of San Christoval and Guadalcanar in

¹ I may take this opportunity of stating that an examination of the typical specimen of *Pteropus molossinus*, Temm., preserved in the Leyden Museum, proves that the Caroline-Island *Pteropus* described by me in 1882 (P. Z. S. 1882, p. 756) under the name of *Pt. breviceps* is not really distinguishable from that species, of which, up to that date, the locality was unknown. I must, however, for my own justification, point out that the shoulder-tufts of *Pt. molossinus*, instead of being "bright yellow" as has been described, are really of a dark orange-brown, but little in the type, and in my specimens not at all, lighter than the general colour of the body. Nor can I at all fully appreciate the alleged resemblance in dentition between the very small-toothed *Pt. molossinus* (see figures t.c. pl. lv.) and the large-toothed *Pt. aneiteanus* and *Pt. jubatus*, the latter of which has the largest teeth of any member of the genus.

1854 by Dr. F. M. Rayner, during the voyage of H.M.S. 'Herald'; not obtained by Mr. Woodford.

4. *CYNONYCTERIS BRACHYOTIS*, Dobs.

a, b. Fauro Island, 5/86.

Previously known habitat, New-Ireland group; also recorded from Celebes¹.

The two specimens obtained by Mr. Woodford are both slightly immature, and both retain their first upper premolars. They agree in every respect with the typical specimens.

5. *HARPYIA MAJOR*, Dobs.

a, b. Alu, Shortland Island, 4/86. (New Georgia, Coll. Brit. Mus.)

Hab. E. New Guinea; New-Ireland group; Solomon Islands.

6. *CEPHALOTES PERONII*, Geoffr.

a. Alu, Shortland Island, 4/86. (Ugi, Dr. H. B. Guppy, H.M.S. 'Lark'; San Christoval, F. M. Rayner, H.M.S. 'Herald'.)

Hab. Austro-Malayan subregion, from Celebes to Solomon Islands.

*NESONYCTERIS*², g. n.

Muzzle long, narrow, cylindrical; nostrils projecting considerably; upper lip with a vertical groove bounded laterally by raised naked edges; posterior palate-ridges divided in the centre; index finger without a claw, longer than the metacarpal bone of the middle finger; wing-membranes as in *Melonycteris*³; tail none.

Dentition:—I. $\frac{2}{1}$, C. $\frac{1}{1}$, Pm. $\frac{3}{3}$, M. $\frac{2}{3} \times 2 = 32$.

Shape, size, and position of teeth much as in *Melonycteris*⁴, but lower inner incisors entirely obsolete.

Skull as in *Melonycteris*; premaxillæ distinctly separated anteriorly⁵. Lower jaw with a very long gutter-like *symphysis*, and with a long diastema between the first premolar and that next behind it.

This most interesting new genus presents a combination of the characters of several of the hitherto known MacroGLOSSINE Bats. Thus, in the clawless state of the index finger it resembles *Eonycteris* and *Notopterus*; by the attachment of its wing-membranes and the form of its palate-ridges, *Melonycteris* and, fairly closely, *Megaloglossus*. And, again, while the number of the incisors is as in *Notopterus*, the other teeth closely resemble those of *Melonycteris*, to which, on the whole, it is certainly most nearly allied.

¹ Jentink, Notes Leyd. Mus. v. p. 173 (1883).

² νῆσος, an island, νυκτερίς, a bat.

³ See Dobson, P. Z. S. 1877, p. 119.

⁴ Figured, *id.* l. c. figs. 5 and 6.

⁵ As they are in *Melonycteris*, although by some accident that genus has been placed under the heading of "premaxillary bones united in front," in the Cat. Chiropt. Brit. Mus. p. 4, nothing being said on the subject in the description of the genus pp. 97-8.

This discovery and that of the highly interesting West-African *Megaloglossus woermanni*, Pagenst.¹, of which I have seen a beautiful spirit specimen from Liberia in the Leyden Museum, render the synopsis of genera in Dr. Dobson's Catalogue of Chiroptera somewhat obsolete, since, according to Dr. Dobson's synopsis, *Nesonycteris* would come next to *Notopteris* and *Eonycteris* instead of to *Melonycteris*, its nearest ally. I have therefore thought it convenient to draw up the following synopses of the MacroGLOSSINE genera, the first based solely on the soft-part and external characters, and the second on those of the skull and teeth.

I. External or Soft-part Characters.

- | | |
|--|-------------------|
| A. Tail very short; wings from the sides of the back. | |
| a. Wing-membrane from the base of the first toe; no claw on index | 1. EONYCTERIS. |
| b. Wing-membrane from the third, or second and third toes. | |
| a'. A claw on index. | |
| a''. Posterior palate-ridges undivided | 2. MACROGLOSSUS. |
| b''. Posterior palate-ridges divided in centre. | |
| a'''. Lower part of rhinarium broad, convex laterally | 3. MEGALOGLOSSUS. |
| b'''. Lower part of rhinarium narrow, concave laterally | 4. MELONYCTERIS. |
| b'. No claw on index. Palate-ridges and rhinarium as <i>Melonycteris</i> | 5. NESONYCTERIS. |
| B. Tail long; wings from centre of back; no claw on index | 6. NOTOPTERIS. |

II. Cranial and Dental Characters.

- | | |
|--|---------------------------------|
| A. Pm. ¹ above and below small, single-rooted. | |
| a. Penultimate molar many times as large as last..... | 1. EONYCTERIS. |
| b. Penultimate molar but little larger than last. | |
| a'. Pm. ¹ nearly as large as that next behind it; premaxillæ united | 2. MACROGLOSSUS. |
| b'. Pm. ¹ minute. | |
| a''. Middle premolar three fourths as long as the canine | 3. MEGALOGLOSSUS ² . |
| b''. Middle premolar barely one third as long as the canine; premaxillæ separate. | |
| a'''. Incisors $\frac{2}{2}$ | 4. MELONYCTERIS. |
| b'''. Incisors $\frac{2}{1}$ | 5. NESONYCTERIS. |
| B. Pm. ¹ above and below long, double-rooted | 6. NOTOPTERIS. |

7. NESONYCTERIS WOODFORDI, sp. n.³ (Plate XXVI.)

a. Ad. sk. ♀. Fauro Island, 5/86.

b, c. Ad. sk. ♂ and yg. al. Alu, Shortland Island, 4/86.

Strikingly like *Melonycteris melanops*⁴, Dobs., in size, proportions, shape and length of ears, and in the colour and texture of the fur of

¹ JB. Hamb. ii. p. 125, pl. i. (1885).

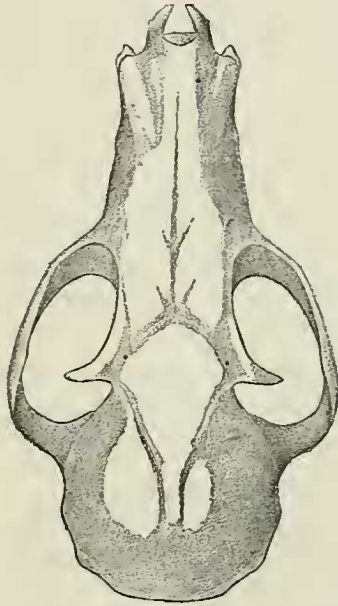
² For several details connected with the dentition of this interesting genus, I am indebted to Dr. F. A. Jentink, of the Leyden Museum.

³ Preliminary diagnosis published, Ann. & Mag. N. H. (5) xix. p. 147, Feb. 1887.

⁴ Figured, P. Z. S. 1877, pl. xvii.

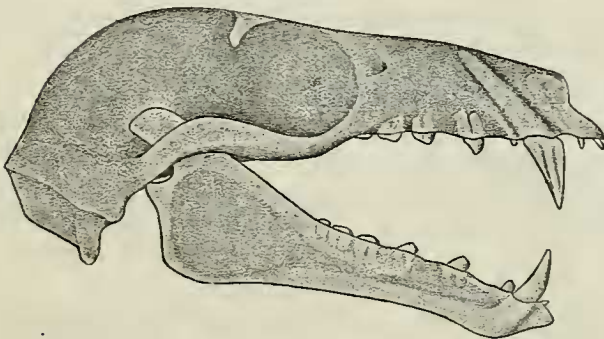
the back, this being of precisely the same soft cottony nature, and of the same fulvous-yellow tinge; but the face, instead of being varigated with black and white, and quite different from the back, is quite like the latter, except that it is rather darker. The under-

Fig. 2.



Skull of *Nesonycteris woodfordi*, upper view; twice natural size.

Fig. 3.



Skull of *Nesonycteris woodfordi*, side view; twice natural size.

side also is very similar to the back, although rather paler and duller, while in *M. melanops* it is nearly black. Point of insertion of the antebrachial membrane without any trace of a white spot.

Ears small, obtusely pointed. Nostrils very prominent. Palate-ridges 7 in number, the 6th and 7th divided in the centre as in *M. melanops*¹.

Humerus, proximal half of forearm, and upperside of hind legs to ankles thickly clothed with soft woolly fulvous fur. Wing-membranes behind humerus and whole of interfemoral membrane also covered with fur. On the lower side the same parts are hairy as on the upper, but the hair is much thinner and sparser.

Skull (figs. 2 and 3) long and slender, with a long narrow muzzle; postorbital processes well developed; premaxillæ widely separated in front.

Upper incisors 4, forming an even semicircular row; canines very long and powerful, with deep vertical grooves on their anterior, external, and posterior surfaces; pm.¹ minute, quite close to the canine; molars very small, smaller even than in *Melonycteris*, posterior one about two thirds the size of the anterior.

Lower incisors one on each side, near the canines, widely separate in the middle; canines slightly grooved posteriorly; pm.¹ close to the canines, and succeeded by a broad diastema; posterior molar in section of about the size of pm.¹.

Dimensions of specimen *b*, an adult male (skin):—

Head and body (c.) 100 mm., head 35, muzzle 15, ear (from notch at base) 11, above crown 8, forearm 55 (= 2.18 in.).

8. *PHYLLORHINA DIADEMA*, Geoffr.

a. Fauro Island, 5/86.

Previously known range: Oriental Region as far east as the Key Islands and Western New Guinea.

9. *PHYLLORHINA CERVINA*, Gould.

a-d. 3 ♂ & 1 ♀. Fauro Island, 5/86.

Previously known range: N. Australia, New Guinea and neighbouring islands, including Duke of York Island.

One of the male specimens has no transverse frontal sac, while the other two have it well developed. In all other respects, however, the specimens are quite identical.

10. *VESPERUGO ABRAMUS*, Temm.

a. Fauro Island, 5/86.

Previously known range: Palæarctic, Oriental, and Austro-Malayan part of Australian Region, as far east as New Guinea.

11. *EMBALLONURA NIGRESCENS*, Gray.

a-f. All ♀. Fauro, Shortland, and Savo Islands. (Ugi; Guppy.)

Previously known range: Austro-Malayan subregion, as far east as New Ireland.

This species seems to be very common in the group, as both

¹ See figure by Pagenstecher, Naturh. Mus. Hamb. 1884, tab. fig. 2.

Surgeon Guppy and Mr. Woodford obtained it in considerable numbers.

For a comparison of the Chiropterous fauna of the Solomons with that of the neighbouring islands, it fortunately happens that the Bats of the nearest group, viz. that of New Britain, New Ireland, and Duke of York, have been fully worked out by Dr. G. E. Dobson¹, who based his papers on the specimens obtained in those islands by the Rev. George Brown. These specimens are all in the Natural History Museum, so that I have had the advantage of being able to compare Mr. Woodford's Bats directly with those named by the chief living authority upon Chiroptera.

The following parallel lists show the species as yet known from the two groups, those marked with an asterisk being peculiar to their respective groups.

MEGACHIROPTERA.

<i>New-Ireland group.</i>	<i>Solomon group.</i>
<i>Pteropus melanopogon.</i>	* <i>Pteropus grandis.</i>
—— <i>capistratus.</i>	—— <i>hypomelanus.</i>
	*—— <i>rayneri.</i>
<i>Cynonycteris brachyotis.</i>	<i>Cynonycteris brachyotis.</i>
<i>Harpyia major.</i>	<i>Harpyia major.</i>
<i>Cephalotes peronii.</i>	<i>Cephalotes peronii.</i>
<i>Macroglossus minimus.</i>	
* <i>Melonycteris melanops.</i>	* <i>Nesonycteris woodfordi.</i>

MICROCHIROPTERA.

<i>Phyllorhina tricuspidata.</i>	<i>Phyllorhina diadema.</i>
—— <i>cervina.</i>	—— <i>cervina.</i>
—— <i>calcarata.</i>	
* <i>Vesperugo angulatus</i> ² .	<i>Vesperugo abramus.</i>
<i>Kerivoula hardwickii.</i>	
<i>Emballonura nigrescens.</i>	<i>Emballonura nigrescens.</i>

The New-Ireland group has therefore two, and the Solomon group three peculiar species, while there are five species common to both groups, a number that is certain to be largely increased as the islands are more fully explored. The proportion of fruit-eating to insectivorous Bats is larger by a slight fraction in the Solomons than in the other group, a difference only to be expected from the more oceanic position of the former. This position has also resulted, so far as is yet known, in the nearly entire absence of terrestrial Mammalia in the Solomons, the only other mammals besides Bats known from there being the arboreal and widely-spread *Cuscus orientalis*, Pall., and a Rat from Florida Island, described by Mr. E. P. Ramsay³. On the other hand, Mr. Brown collected in the New-Ireland group, as recorded by Mr. Alston⁴, no less than six indigenous

¹ P. Z. S. 1877, p. 114, and 1878, p. 314.

² Peters, SB. nat. Freund. 1880, p. 122. Only known to me by the original description.

³ Proc. Linn. Soc. N. S. W. vii. p. 43, 1882. This Rat appears to be a member of the arboreal genus *Uromys*.

⁴ P. Z. S. 1877, p. 123.

species of Rodents and Marsupials, many of them of such a distinctly non-arboreal nature as to preclude the possibility of their having been originally introduced on drifting logs or trees, a means of distribution to which no doubt the Solomons owe the presence of their two non-flying mammals and Rat, the *Cuscus*.

2. A List of the Birds collected by Mr. Charles Morris Woodford in the Solomon Archipelago. By W. R. OGILVIE-GRANT.

[Received February 14, 1887.]

(Plate XXVII.)

The Natural History Museum has recently received a collection of Birds made by Mr. C. M. Woodford at Fauro, Alu, Shortland Island, and other localities; and, although comparatively few specimens were obtained, some of the species are very interesting, and one at least is new to science. This is a Crow belonging to the genus *Macrocorax*.

The following is an extract from a letter received from Mr. C. M. Woodford:—"I find that Hornbills and Cockatoos do not extend beyond Malayta, being entirely unknown on the island of San Christoval and the smaller islands adjacent; and as they are not found in the groups to the south-east, this will be the limit to which these two genera extend."

The following is a list of the species, with remarks on some of the rarer ones, and notes on their soft parts made by the collector.

1. *ASTUR PULCHELLUS*.

Urospizias pulchellus, Ramsay; *Salvad. Orn. Papuasias*, iii. App. p. 508.

a. ♂ ad. Alu. Iris brown; bill black at tip; nostrils and base of mandibles yellow; legs yellow.

b. ♂ juv. Fauro. Iris brown; legs and base of bill yellow; the tip black.

This species, at first described by Ramsay as *A. soloensis*, Lath., as already observed by Finsch, is a very distinct bird. It is nearly allied to *A. dampieri*, Gurney, but may be easily distinguished by the colour of the breast and abdomen, which is a uniform deep vinous red (chestnut-hazel, Ridgway) instead of vinous with faint, narrow, pale cross bars on the flanks, belly, and under tail-coverts.

Char. *Male adult*. Head, back, upper coverts, quills and tail-feathers slaty grey (Ridgway), the latter without any trace of cross bars. Throat and fore neck light slaty grey. Breast, abdomen, flanks, and under tail-coverts deep vinous red (chestnut-hazel, Ridgw.). Axillaries and under wing-coverts pale vinous red the latter with greyish cross bars. Quills below slaty grey, the inner web lighter, with whitish wavy bars towards the distal extremity.

Total length 13·5 inches, culmen ·6, wing 7·7, tail 6·25, tarsus 2·1.